

CLAIMS

1. A mobile station employing an MT-TA Interface description defined by ARIB (Association of Radio Industries and Businesses) TR-T12-27.A02, said mobile station comprising:

a plurality of MTFs (Mobile Termination Function) (1, 2); and

a TAF (Terminal Adaptation Function) (3) which is an adaptor portion between a TE (Terminal Equipment) (5) having an HMI (Human Machine Interface) and each of said plurality of MTFs; wherein

each of said plurality of MTFs is a wireless channel control part employing a different wireless communications method,

one of said plurality of MTFs (1), when receiving a handover request (IM1) from a corresponding network (7), transmits to another of said plurality of MTFs (2) and to said TAF (3) notifications (NT1, RQ1) that a handover procedure to said another of said plurality of MTFs (2) is started,

said another of said plurality of MTFs (2), upon receiving said handover procedure start notification (NT1), communicates with another corresponding network (8) to complete a handover procedure on a wireless channel (IM2a through IM2d, IM3), and transmits to said TAF (3) a notification (NT3) that said handover procedure on said wireless channel is completed,

said TAF, upon receiving said handover procedure start notification (RQ1), pauses a communication with said one of said plurality of MTFs (1) (S3), and upon receiving said notification (NT3) that said handover procedure on said wireless channel is completed, switches to a communication with said another of said plurality of MTFs (2) (RP1, RP2, NT3, S5).

2. The mobile station according to claim 1, wherein

said handover request (IM1a) includes information regarding a communication parameter between said TAF (3) and said another network (8) which is a destination,

5 said communication parameter includes at least either information regarding a kind of a voice CODEC in said TAF, or information regarding a communication speed between said TAF and said another network (8) which is the destination,

said one of said plurality of MTFs (1) further transmits said information (NT1, RQ1) regarding said communication parameter to said TAF (3),

10 said TAF (3), after changing a setting regarding a communication based on said information regarding said communication parameter (S3a, S5a), switches to a communication with said another of said plurality of MTFs (2) (RP1, RP2, NT3).

3. The mobile station according do claim 1, wherein

15 when said handover procedure on said wireless channel does not complete and fails, said another of said plurality of MTFs (2) transmits a handover procedure failure notification (NT2a) to said one of said plurality of MTFs (1),

said one of said plurality of MTFs (1), upon receiving said handover procedure failure notification (NT2a), communicates with said corresponding network (7) to execute
20 a reverting procedure (S4b),

said TAF, upon receiving said handover procedure failure notification (NT3a) from said one of said plurality of MTFs (1), resumes a communication with said one of said plurality of MTFs (1) (S5).

25 4. A telecommunications method using a mobile station employing an MT-TA

Interface description defined by ARIB (Association of Radio Industries and Businesses)
TR-T12-27.A02,

said mobile station comprising:

a plurality of MTFs (Mobile Termination Function) (1, 2); and

5 a TAF (Terminal Adaptation Function) (3) which is an adaptor portion between
a TE (Terminal Equipment) (5) having an HMI (Human Machine Interface) and each of
said plurality of MTFs; wherein

each of said plurality of MTFs is a wireless channel control part employing a
different wireless communications method,

10 said method comprising the steps of:

(a) prompting one of said plurality of MTFs (1) to transmit to another of said
plurality of MTFs (2) and to said TAF (3) notifications (NT1, RQ1) that a handover
procedure to said another of said plurality of MTFs (2) is started, when said one of said
plurality of MTFs (1) receives a handover request (IM1) from a corresponding network
15 (7);

(b) prompting said another of said plurality of MTFs (2) to communicate with
another corresponding network (8) to complete a handover procedure on a wireless
channel (IM2a through IM2d, IM3), and transmit to said TAF (3) a notification (NT3)
that said handover procedure on said wireless channel is completed, when said another of
20 said plurality of MTFs (2) receives said handover procedure start notification (NT1); and

(c) prompting said TAF (3) to pause a communication with said one of said
plurality of MTFs (1) (S3) when said TAF (3) receives said handover procedure start
notification (RQ1), and to switch to a communication with said another of said plurality
of MTFs (2) (RP1, RP2, NT3, S5) when said TAF (3) receives said notification (NT3)
25 that said handover procedure on said wireless channel is completed.

5. The telecommunications method according to claim 4, wherein

said handover request (IM1a) includes information regarding a communication parameter between said TAF (3) and said another network (8) which is a destination,

5 said communication parameter includes at least either information regarding a kind of a voice CODEC in said TAF, or information regarding a communication speed between said TAF and said another network (8) which is a destination,

said one of said plurality of MTFs (1) further transmits said information (NT1, RQ1) regarding said communication parameter to said TAF (3),

10 said TAF (3), after changing a setting regarding a communication based on said information regarding said communication parameter (S3a, S5a), switches to a communication with said another of said plurality of MTFs (2) (RP1, RP2, NT3).

6. The telecommunications method according to claim 4, wherein

15 when said handover procedure on said wireless channel does not complete and fails, said another of said plurality of MTFs (2) transmits a handover procedure failure notification (NT2a) to said one of said plurality of MTFs (1),

said one of said plurality of MTFs (1), upon receiving said handover procedure failure notification (NT2a), communicates with said corresponding network (7) to execute
20 a reverting procedure (S4b),

said TAF, upon receiving said handover procedure failure notification (NT3a) from said one of said plurality of MTFs (1), resumes a communication with said one of said plurality of MTFs (1) (S5).

25 7. A telecommunications system, comprising:

a mobile station (6) employing an MT-TA Interface description defined by ARIB (Association of Radio Industries and Businesses) TR-T12-27.A02;

a network (7); and

another network (8), wherein

5 said mobile station comprises:

a plurality of MTFs (Mobile Termination Function) (1, 2); and

a TAF (Terminal Adaptation Function) (3) which is an adaptor portion between a TE (Terminal Equipment) (5) having an HMI (Human Machine Interface) and each of said plurality of MTFs; wherein

10 each of said plurality of MTFs is a wireless channel control part employing a different wireless communications method,

one of said plurality of MTFs (1), when receiving a handover request (IM1) from said corresponding network (7), transmits to another of said plurality of MTFs (2) and to said TAF (3) notifications (NT1, RQ1) that a handover procedure to said another
15 of said plurality of MTFs (2) is started,

said another of said plurality of MTFs (2), upon receiving said handover procedure start notification (NT1), communicates with said another corresponding network (8) to complete a handover procedure on a wireless channel (IM2a through IM2d, IM3), and transmits to said TAF (3) a notification (NT3) that said handover procedure on
20 said wireless channel is completed,

said TAF, upon receiving said handover procedure start notification (RQ1), pauses a communication with said one of said plurality of MTFs (1) (S3), and upon receiving said notification (NT3) that said handover procedure on said wireless channel is completed, switches to a communication with said another of said plurality of MTFs (2)
25 (RP1, RP2, NT3, S5).

8. The telecommunications system according to claim 7, wherein

said handover request (IM1a) includes information regarding a communication parameter between said TAF (3) and said another network (8) which is a destination,

5 said communication parameter includes at least either information regarding a kind of a voice CODEC in said TAF, or information regarding a communication speed between said TAF and said another network (8) which is a destination,

said one of said plurality of MTFs (1) further transmits said information (NT1, RQ1) regarding said communication parameter to said TAF (3),

10 said TAF (3), after changing a setting regarding a communication based on said information regarding said communication parameter (S3a, S5a), switches to a communication with said another of said plurality of MTFs (2) (RP1, RP2, NT3).

9. The telecommunications system according to claim 7, wherein

15 when said handover procedure on said wireless channel does not complete and fails, said another of said plurality of MTFs (2) transmits a handover procedure failure notification (NT2a) to said one of said plurality of MTFs (1),

said one of said plurality of MTFs (1), upon receiving said handover procedure failure notification (NT2a), communicates with said corresponding network (7) to execute
20 a reverting procedure (S4b),

said TAF, upon receiving said handover procedure failure notification (NT3a) from said one of said plurality of MTFs (1), resumes a communication with said one of said plurality of MTFs (1) (S5).

25 10. A mobile station, comprising:

a plurality of wireless channel control parts (15, 16); and

a voice communication control part (17) for controlling a voice CODEC (10);

wherein

each of said plurality of wireless channel control parts (15, 16) is a wireless
5 channel control part employing a different wireless communications method,

one of said plurality of wireless channel control parts (15), when receiving a
handover request (IM1) from a corresponding network (7), transmits to another of said
plurality of wireless channel control parts (16) and to said voice communication control
part (17) notifications (NT1, RQ1a) that a handover procedure to said another of said
10 plurality of wireless channel control parts (16) is started,

said another of said plurality of wireless channel control parts (16), upon
receiving said handover procedure start notification (NT1), communicates with another
corresponding network (8) to complete a handover procedure on a wireless channel (IM2a
through IM2d, IM3),

15 said voice communication control part (17), upon receiving said handover
procedure start notification (RQ1a), pauses a communication between said one of said
plurality of wireless channel control parts (15) and said voice communication control part
(17) (S7) and applies a mute control to said voice CODEC so as not to output a sound
(NT4, S8), and when said handover procedure on said wireless channel is completed,
20 switches to a communication between said another of said plurality of wireless channel
control parts (16) and said voice communication control part (17) (RP1, RP2, NT3, S9)
and removes said mute control to said voice CODEC (NT5, S10).

11. A telecommunications method using a mobile station (11),

25 said mobile station (11) comprising:

a plurality of wireless channel control parts (15, 16); and

a voice communication control part (17) for controlling a voice CODEC (10);

wherein

each of said plurality of wireless channel control parts (15, 16) is a wireless
5 channel control part employing a different wireless communications method,

said method comprising the steps of:

(a) prompting one of said plurality of wireless channel control parts (15) to
transmit to another of said plurality of wireless channel control parts (16) and to said
voice communication control part (17) notifications (NT1, RQ1a) that a handover
10 procedure to said another of said plurality of wireless channel control parts (16) is started,
when said one of said plurality of wireless channel control parts (15) receives a handover
request (IM1) from a corresponding network (7);

(b) prompting said another of said plurality of wireless channel control parts
(16) to communicate with another corresponding network (8) to complete a handover
15 procedure on a wireless channel (IM2a through IM2d, IM3), when said another of said
plurality of wireless channel control parts (16) receives said handover procedure start
notification (NT1); and

(c) prompting said voice communication control part (17) to pause a
communication between said one of said plurality of wireless channel control parts (15)
20 and said voice communication control part (17) and apply a mute control to said voice
CODEC so as not to output a sound (NT4, S8) when said voice communication control
part (17) receives said handover procedure start notification (RQ1a), and switch to a
communication between said another of said plurality of wireless channel control parts
(16) and said voice communication control part (17) (RP1, RP2, NT3, S9) and remove
25 said mute control to said voice CODEC (NT5, S10), upon completion of said handover

procedure on said wireless channel.

12. A telecommunications system, comprising:

a mobile station (11),

5 a network (7); and

another network (8), wherein

said mobile station comprises:

a plurality of wireless channel control parts (15, 16); and

a voice communication control part (17) for controlling a voice CODEC (10);

10 wherein

each of said plurality of wireless channel control parts (15, 16) is a wireless channel control part employing a different wireless communications method,

one of said plurality of wireless channel control parts (15), when receiving a handover request (IM1) from said corresponding network (7), transmits to another of said plurality of wireless channel control parts (16) and to said voice communication control part (17) notifications (NT1, RQ1a) that a handover procedure to said another of said plurality of wireless channel control parts (16) is started,

15

said another of said plurality of wireless channel control parts (16), upon receiving said handover procedure start notification (NT1), communicates with said another corresponding network (8) to complete a handover procedure on a wireless channel (IM2a through IM2d, IM3),

20

said voice communication control part (17), upon receiving said handover procedure start notification (RQ1a), pauses a communication between said one of said plurality of wireless channel control parts (15) and said voice communication control part (17) (S7) and applies a mute control to said voice CODEC so as not to output a sound

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(NT4, S8), and upon completion of said handover procedure on said wireless channel, switches to a communication between said another of said plurality of wireless channel control parts (16) and said voice communication control part (17) (RP1, RP2, NT3, S9) and removes said mute control to said voice CODEC (NT5, S10).